| 2   | 93     | 216/17.ccls. 216/17.ccls. and laser                                       | USPAT;<br>US-PGPUB;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB<br>USPAT; | 2002/10/01 10:27 |
|-----|--------|---|---|------------------|
|     |        | 216/17.ccls. and laser  | EPO; JPO;<br>DERWENT;<br>IBM_TDB                                  |                  |
|     |        | 216/17.ccls. and laser  | DERWENT;<br>IBM_TDB   |                  |
|     |        | 216/17.ccls. and laser  | IBM_TDB   |                  |
|     |        | 216/17.ccls. and laser  |   |                  |
|     |        | 216/17.ccls. and laser  | LISPAT:   |                  |
| 3   |        |   |   | 2002/10/01 10:27 |
| 3   |        |   | US-PGPUB;   |                  |
| 3   |        |   | ЕРО; ЛРО;   |                  |
| 3   |        |   | DERWENT;  |                  |
| 3   |        |   | IBM_TDB   |                  |
|     | 6      | 216/17.ccls. and (laser same alignment)                                   | USPAT;  | 2002/10/01 10:30 |
|     |        |   | US-PGPUB;   |                  |
|     |        |   | ЕРО; ЛРО;   |                  |
|     |        |   | DERWENT;  |                  |
| 1   |        |   | IBM_TDB   |                  |
| 4   | 6      | 216/17.ccls. and (laser same mark)  | USPAT;  | 2002/10/01 10:30 |
| 1   |        |   | US-PGPUB;   |                  |
| ĺ   | 1      |   | ЕРО; ЈРО;   |                  |
|     | ,      |   | DERWENT;  |                  |
|     |        |   | IBM_TDB   |                  |
| 5   | 5      | (216/17.ccls. and (laser same mark)) not (216/17.ccls. and (laser same    | USPAT;  | 2002/10/01 10:59 |
|     | -      | alignment))   | US-PGPUB;   |                  |
|     | -      |   | ЕРО; ЈРО;   |                  |
| l l | ł      |   | DERWENT;  |                  |
| i   | ì      |   | IBM_TDB   |                  |
| 6   | 3430   | 216/13-21.ccls.   | USPAT;  | 2002/10/01 10:59 |
| (   | (      |   | US-PGPUB;   |                  |
| 1   | (      |   | EPO; JPO;   |                  |
|     | 1      |   | DERWENT;  |                  |
|     | }      |   | IBM_TDB   |                  |
| 7   | 1246   | 216/51.ccls. or 216/52.ccls.  | USPAT;  | 2002/10/01 11:00 |
|     | 1      |   | US-PGPUB;   |                  |
|     | ì      |   | ЕРО; ЛРО;   |                  |
|     | i      |   | DERWENT;  |                  |
|     |        |   | IBM_TDB   |                  |
| 8   | 1215   | 216/100.ccls. or 216/105.ccls.  | USPAT;  | 2002/10/01 11:00 |
| )   |        |   | US-PGPUB;   |                  |
| 1   |        |   | ЕРО; ЛРО;   |                  |
|     | 1      |   | DERWENT;  |                  |
|     | 1407   | 210/121 (0 -1 - 210/121 71 -1   | IBM_TDB   | 2002/10/01 11:00 |
| 10  | 1407   | 219/121.69.ccls. or 219/121.71.ccls.                                      | USPAT;<br>US-PGPUB;   | 2002/10/01 11:00 |
| 1   | -      |   |   |                  |
| 1   | -      |   | EPO; JPO;<br>DERWENT;   |                  |
| 1   | )      |   | IBM TDB   |                  |
| 11  | 398    | 29/847.ccls.  | USPAT;  | 2002/10/01 11:00 |
| 11  | 396    | 27/09 / .Cc18.  | US-PGPUB;   | 2002/10/01 11:00 |
| 1   |        |   | EPO; JPO;   |                  |
|     | 1      |   | DERWENT;  |                  |
| 1   | ì      |   | IBM TDB   |                  |
| 21  | 6928   | 216/13-21.ccls. or (216/51.ccls. or 216/52.ccls.) or (216/100.ccls. or    | USPAT;  | 2002/10/01 11:10 |
| 2.  | 0,20   | 216/105.ccls. ) or (219/121.69.ccls. or 219/121.71.ccls.) or 29/847.ccls. | US-PGPUB;   | 200251000111.10  |
| 1   | ĺ      | 210:103.000. ) 01 (217/121.07.000. 01 217/121.71.000.) 01 27/047.000.     | ЕРО; ЛРО;   |                  |
|     | J      |   | DERWENT;  |                  |
| 1   | )      |   | IBM TDB   |                  |
| 22  | 337535 | laser.ab.   | USPAT;  | 2002/10/01 11:10 |
|     | 231333 | Marian.   | US-PGPUB;   | 2002010/01 11:10 |
|     |        |   | EPO; JPO;   |                  |
|     |        |   | DERWENT;  |                  |
|     |        |   | IBM_TDB   |                  |

| 23 | 220134  | etch\$4.ab.   | USPAT:    | 2002/10/01 11:12 |
|----|---------|---|-----------|------------------|
| 23 | 220134  | Cichor.ab.  | US-PGPUB; | 2002/10/01 11:12 |
| 1  | 1       |   | EPO; JPO; |                  |
|    |         |   | DERWENT:  |                  |
| 1  | 1       |   | IBM TDB   |                  |
| 24 | 1800744 | (alignment or mark or slit or pin or edge).ab.                          | USPAT;    | 2002/10/01 11:14 |
| 24 | 1000744 | (angunetic of mark of site of pin of eage).ao.                          | US-PGPUB; | 2002010/01 11/11 |
| 1  |         |   | EPO; JPO; |                  |
|    |         |   | DERWENT:  |                  |
|    |         |   | IBM TDB   |                  |
| 25 | 1108    | laser.ab, and etch\$4.ab. and ((alignment or mark or slit or pin or     | USPAT:    | 2002/10/01 11:14 |
| 23 | 1100    | edge).ab.)  | US-PGPUB; | 2002010/01 11111 |
|    |         | euge).ab.)  | EPO; JPO; |                  |
| 1  | 1       |   | DERWENT;  |                  |
| 1  |         |   | IBM TDB   |                  |
| 26 | 59505   | 148/\$.ccls.  | USPAT;    | 2002/10/01 11:16 |
| 20 | 39303   | 140/3.0015.   | US-PGPUB; | 2002/10/01 11:10 |
|    | 1       |   | EPO; JPO; |                  |
|    | 1       |   | DERWENT:  |                  |
| İ  |         |   | IBM TDB   |                  |
| 27 | 16      | (laser.ab, and etch\$4.ab, and ((alignment or mark or slit or pin or    | USPAT:    | 2002/10/01 11:28 |
| 27 | 10      | edge).ab.)) and (216/13-21.ccls. or (216/51.ccls. or 216/52.ccls.) or   | US-PGPUB; | 2002/10/01 11:20 |
|    |         | (216/100.ccls, or 216/105.ccls.) or (219/121.69.ccls. or                | EPO; JPO; |                  |
| ł  |         | 219/121.71.ccls.) or 29/847.ccls.)                                      | DERWENT;  |                  |
|    |         | 219/121.71.ccis.) 01 29/047.ccis.)                                      | IBM TDB   |                  |
| 28 | 129     | 148/dig.105.ccls.   | USPAT:    | 2002/10/01 11:28 |
| 20 | 129     | 146/dig.103.ccis.   | US-PGPUB; | 2002/10/01 11:26 |
|    |         |   | EPO; JPO; |                  |
|    |         |   | DERWENT:  |                  |
|    |         |   | IBM TDB   |                  |
| 29 | 12      | ((alignment or mark or slit or pin or edge).ab.) and 148/dig.105.ccls.  | USPAT;    | 2002/10/01 11:46 |
| 29 | 12      | ((anginient of mark of one of partor edge).ab.) and 148/dig.103.ceis.   | US-PGPUB; | 2002/10/01 11:40 |
|    |         |   | EPO; JPO; | ]                |
|    |         |   | DERWENT;  |                  |
|    | l       |   | IBM TDB   |                  |
| 30 | 8       | (219/121.69.ccls, or 219/121.71.ccls.) and (alignment same etch\$4 same | USPAT;    | 2002/10/01 11:47 |
| 30 |         | laser same (metal\$3 or conduct\$4 or trace))                           | US-PGPUB; | 2002/10/01 11.47 |
| 1  | l       | laser same (metalos or conductor or dace))                              | EPO: JPO: |                  |
|    | 1       |   | DERWENT;  |                  |
| 1  |         |   | IBM TDB   |                  |
|    |         |   | IDM_IDB   |                  |

CLIPPEDIMAGE= JP404186731A

PAT-NO: JP404186731A

DOCUMENT-IDENTIFIER: JP 04186731 A

TITLE: CIRCUIT BOARD WITH TERMINAL FOR MOUNTING CIRCUIT PARTS AND MANUFACTURE THEREOF

PUBN-DATE: July 3, 1992

INVENTOR-INFORMATION: NAME INABA, MASAKAZU MIYAGAWA, ATSUSHI IWAYAMA, TAKESHI

ASSIGNEE-INFORMATION: NAME NIPPON MEKTRON LTD

APPL-NO: JP02315584

APPL-DATE: November 20, 1990

INT-CL (IPC): H01L021/321:H01L021/3205

US-CL-CURRENT: 216/17

ABSTRACT:

PURPOSE: To prevent connection failure when mounting circuit parts by cladding and forming a metal layer with an improved corrosion property on a surface of a circuit wiring pattern and then forming a hole for continuity reaching the circuit wiring pattern by emitting excima laser from an opposite side.

COUNTRY

N/A

CONSTITUTION: A metal mask 3 has a hole 4 at a position where a circuit wiring pattern 2 is positioned and at the same time a groove hole for

separation  $5\ \hat{\mathbf{1}}\mathbf{s}$  provided along an outer shape of a product. A metal layer 6 with an improved

corrosion resistance is formed on a surface of the circuit wiring pattern 2 by

plating, etc., and then a protection film  $\theta$  is applied onto it using an adhesive 7. An excima laser light A is emitted from a side of the metal mask 3

for forming a hole for continuity 10 and a separation groove 5A. When eliminating etching of the metal mask 3, conduction in the bottom part of the

hole for continuity 10 cannot be lost due to presence of the metal

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layer 6 and one edge is electrically joined to the circuit wiring pattern 2 and at the same time a pad for connection of circuit parts such as an IC which protrudes outside of an insulation base material 1 or a bump 11 can be formed at the other edge.

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